



Eighth International Symposium on Solid Oxide Fuel Cells (SOFC-VIII)

Chairmen



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**The Electrochemical
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Program

Monday, April 28, 2003

Havane Amphitheater, Level 3, Le Palais des Congrès

SOFC Status

Co-Chairs: S.C. Singhal and M. Dokiya

- 10:00 **Opening Remarks** by S.C. Singhal and M. Dokiya
- 10:20 **U.S. DOE Office of Fossil Energy Solid Oxide Fuel Cell Programs** – M. Williams and J. Strakey, U.S. Department of Energy
- 10:40 **SOFC Research in the European Union—Running Activities and Future Prospects** – A. Paparella, European Union
- 11:00 **Status of National Project for SOFC Development in Japan** – H. Fujii, NEDO
- 11:20 **Fuel Cells Applied to Automotive: Revolution Through Evolution** – J. Botti, Delphi Corporation
- 11:40 **Solid Oxide Fuel Cell Development at PNNL** – J. Stevenson et al, Pacific Northwest National Laboratory

SOFC Stacks and Systems

Co-Chairs: J. Strakey and D. Stöver

- 13:40 **Solid Oxide Fuel Cell Systems for Power Generation Applications** – N. Minh, General Electric Power Systems
- 14:00 **Design and Manufacture of CFCL's Modular and Thermally Cyclable Stack Technology** – K. Föger and J. Love, Ceramic Fuel Cells Ltd.
- 14:20 **Development of MOLB Type SOFC** – K. Takenobu, H. Miyamoto, H. Aiki, and M. Nishiura, Mitsubishi Heavy Industries, Ltd., Y. Sakaki, A. Nakanishi, and M. Hattori, Chubu Electric Power Company, Inc.
- 14:40 **Following the Critical Path: An Update on Global Thermo-electric's SOFC Technology and Product Development** – B. Borglum, J.-J. Fan, and E. Neary, Global Thermoelectric Inc.
- 15:00 **Development of Tubular Type SOFC Module** – H. Takeuchi, A. Veno, M. Kuroishi, S. Aikawa, and T. Abe, TOTO Ltd.
- 15:20 **Scale Up of a Multi-Functional Solid Oxide Fuel Cell to Multi-Tens of Kilowatt Level (MF-SOFC)** – G.D. Agnew, N.T. Hart, G.J. Wright, M. Cassidy, R.D. Collins, P.D. Butler, Rolls-Royce Fuel Cell Systems Ltd., N. Bonanos, H.S. Thomsen, J.J. Bentzen, Y.-L. Liu, Risø National Laboratory, A. Atkinson, R. Travis, Imperial College, G. Bertrand, C. Di-Pastena, Gaz de France, C. Thompson, M.A. Henson, and M.J. Day, Advanced Ceramics Limited
- 15:40 **Twenty-Minute Intermission**
- 16:00 **Development of Solid Oxide Fuel Cell Stack by Delphi and Battelle** – S. Mukerjee, S. Shaffer, J. Zizelman, Delphi Corporation, L. Chick, S. Bhaskaran, M. Chou, C. Coyle, J. Deibler, G. Maupin, K. Meinhardt, D. Paxton, T. Peters, V. Sprenkle, R. Williford, and S. Weil, Pacific Northwest National Laboratory operated by Battelle Memorial Institute
- 16:20 **Recent Results of Stack Development at Forschungszentrum Jülich** – R. Steinberger-Wilckens, L.G.J. de Haart, I.C. Vinke, L. Blum, A. Cramer, J. Remmel, G. Blaß, F. Tietz, and W.J. Quadakkers, Forschungszentrum Jülich
- 16:40 **Status of the SOFC Development at Haldor Topsøe/Risø** – N. Christiansen, S. Kristensen, H. Holm-Larsen, Haldor Topsøe A/S, S. Linderoth, M. Bjerg Mogensen, P. Vang Hendriksen, and P. Halvor Larsen, Risø National Laboratory

- 17:00 **Development of Intermediate-Temperature SOFC Module Using Doped Lanthanum Gallate** – T. Yamada, N. Chitose, J. Akikusa, N. Murakami, T. Akbay, T. Miyazawa, K. Adachi, A. Hasegawa, M. Yamada, K. Hoshino, K. Hosoi, N. Komada, Mitsubishi Materials Corporation, H. Yoshida, M. Kawano, T. Sasaki, T. Inagaki, The Kansai Electric Power Co., Inc., K. Miura, Kanden Kakou Co., Ltd., T. Ishihara, and Y. Takita, Oita University
- 17:20 **Development of Anode-Supported SOFC with Metallic Interconnector** – Y. Baba, T. Ogiwara, H. Yakabe, Y. Matsuzaki, and T. Sakurai, Tokyo Gas Co., Ltd.
- 17:40 **Global Thermoelectric's Integrated Cell Manufacturing of Planar SOFCs** – B. Borglum, E. Tang, F. Martell, R. Brûlé, and K. Marcotte, Global Thermoelectric Inc.

Tuesday, April 29, 2003

Havane Amphitheater, Level 3, Le Palais des Congrès

Innovative SOFC Systems and Fuels

Co-Chairs: M. Williams and H. Yokokawa

- 8:00 **Portable SOFC Generator with Innovative Spirocells** – U. Bossel, Fuel Cell Consultant
- 8:20 **Micro Solid Oxide Fuel Cell** – P. Sarkar and H. Rho, Alberta Research Council
- 8:40 **Thermodynamic Analysis of Diesel Reforming Options for SOFC Systems** – K. Ahmed and K. Föger, Ceramic Fuel Cells, Ltd.
- 9:00 **Cool Flame Evaporation for Diesel Reforming Technology** – L. Hartmann, C. Mengel, K. Lucka, and H. Köhne, Oel-Wärme-Institut Aachen
- 9:20 **Partial Oxidation Reforming of Dry Diesel Oil, Dimethyl Ether and Methane Using SOFC** – M. Dokiya, Yokohama National University
- 9:40 **Twenty-Minute Intermission**
- 10:00 **Power Generating Property of Direct Dimethyl Ether SOFC Using LaGaO₃ Based Perovskite Electrolyte** – A. Tatemi, S. Wang, T. Ishihara, H. Nishiguchi, and Y. Takita, Oita University
- 10:20 **Propane Fuel Processing for SOFC Systems** – J. Devitt, J. Xu, C. Lukaniuk, G. Price, and M. Staite, Global Thermoelectric Inc.
- 10:40 **Propane Fueled Solid Oxide Fuel Cells** – Z. Zhan, B. Madsen, J. Liu, and S. Barnett, Northwestern University
- 11:00 **Formulating Liquid Hydrocarbon Fuels for SOFCs** – G. Saunders and K. Kendall, University of Birmingham
- 11:20 **Running SOFCs on Biogas** – J. Staniforth and M. Ormerod, Keele University
- 11:40 **Power Generation Characteristics of SOFCs for Alcohols and Hydrocarbon-based Fuels** – K. Sasaki, K. Watanabe, K. Shiosaki, K. Susuki, and Y. Teraoka, Kyushu University

Anode Materials, Processing and Performance

Co-Chairs: A.J. McEvoy and T. Kawada

- 13:40 **Reduction and Re-Oxidation Kinetics of Nickel-Based Solid Oxide Fuel Cell Anodes** – N. Tikekar, T. Armstrong, and A. Virkar, University of Utah
- 14:00 **H₂-H₂O-Ni-YSZ Electrode Performance and Segregation to the Interface** – K. Vels Hansen and M. Mogensen, Risø National Laboratory

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- 14:20 **Characterization of Anode/Electrolyte Interface for Advanced Anode Structures** – A.C. Müller, A. Krügel, and E. Ivers-Tiffée, Universität Karlsruhe
- 14:40 **Effect of Additive to Ni-YSZ Cermet on Reforming of CH₄ and Electrochemical Activity for SOFC** – T. Takeguchi, T. Yano, Y. Kani, R. Kikuchi, and K. Eguchi, Kyoto University
- 15:00 **A Comparison of Cu-Ceria-SDC and Au-Ceria-SDC Composites for SOFC Anodes** – C. Lu, W.L. Worrell, J.M. Vohs, and R.J. Gorte, University of Pennsylvania
- 15:20 **SOFC Anode for Direct Oxidation of CH₄ at Intermediate Temperatures** – A. Sin, A. Tavares, Y. Dubitsky, A. Zaopo, Pirelli Labs, A.S. Aricó, L. Gullo, D. La Rosa, S. Siracusano, and V. Antonucci, CNR-ITAE
- 15:40 **Twenty-Minute Intermission**
- 16:00 **High-Performance Electrodes for Medium-Temperature Solid Oxide Fuel Cells: Mixed Conducting Ceria-Based Anode with Highly-Dispersed Ni Electrocatalysts** – H. Uchida, S. Suzuki, and M. Watanabe, University of Yamanashi
- 16:20 **Electrochemical Behavior of Ni-Ce_{0.9}Gd_{0.1}O_{2-δ} SOFC Anodes in Methane** – B. Rösch, H. Tu, U. Stimming, Technische Universität München, A.O. Störmer, BMW Group, and A.C. Müller, Universität Karlsruhe
- 16:40 **Internal Reforming in Intermediate Temperature SOFCs** – S. Livermore, C. Chung, and M. Ormerod, Keele University
- 17:00 **The Impact of Wood Derived Gasification Gases on Ni-CGO Anodes in IT-SOFCs** – S. Baron, N. Brandon, A. Atkinson, and B. Steele, Imperial College of Science, Technology, and Medicine
- 17:20 **Evaluation of Mechanochemically Synthesized NiO/SDC Composite Nanopowders for the Development of Nanostructured Cermet Anodes** – J. Hos, University of Western Australia and P. McCormick, Advanced Nano Technologies Pty Ltd.
- 17:40 **Conductivity and Electrochemical Performance of a New Perovskite-type SOFC Anode Material** – S. Tao and J.T.S. Irvine, University of St. Andrews
- **Characteristics of Anodic Polarization of Solid Oxide Fuel Cells under Pressurized Conditions** – R. Kikuchi, T. Yano, T. Takeguchi, and K. Eguchi, Kyoto University
- **Cu_{0.7}Fe_{0.3}O_x/SDC/Ni Anode for Reduced Temperature Solid Oxide Fuel Cell** – X.-Z. Liao, Z.-F. Ma, Shanghai Jiao Tong University, and B. Zhu, Royal Institute of Technology
- **New Chemical Routes for Preparation of Ultrafine NiO-YSZ Powders for SOFC Anode Applications** – V. Esposito, C. D’Ottavi, S. Ferrari, S. Licoccia, and E. Traversa, Università di Roma Tor Vergata
- **Solid-solutioning Effect of the Ni-based Cermet on the Electrochemical Oxidation of Methane** – K. Sato, Y. Ohmine, K. Ogasa, and S. Tsuji, Nagaoka University of Technology
- **Performance of YSZ-supported Anode for SOFC Substrates** – A. Nakamura, S. Yokota, Y. Shimizu, The Chugoku Electric Power Co., Inc., H. Itoh, T. Yamamoto, and K. Izumi, Central Research Institute of Electric Power Industry
- **Anodes for Direct Oxidation of Natural Gas in SOFCs** – S. Livermore, C. Chung, and M. Ormerod, Keele University
- **Effect of Anode Porosity and Pore Size on Electrochemical Performance** – X. Deng and A. Petric, McMaster University
- **Electrodes for Oxidation of Methane** – K. Kammer Hansen, and M. Mogensen, Risø National Laboratory
- **First Results on a (La,Sr)CrO₃ Anode Fed with Methane** – J. Vulliet, B. Morel, J. Laurencin, G. Gauthier, CEA Grenoble, L. Bianchi, CEA Le Ripault, S. Giraud, CEA Saclay, J.Y. Henry, and F. Lefebvre-Joud, CEA Grenoble
- **First Steps of a Cell Model Centered on the Direct Internal Reforming at the Anode** – B. Morel, CEA Grenoble, J. Deseure, Y. Bultel, J. Fouletier, LEPMI-ENSEEG, and F. Lefebvre-Joud, CEA Grenoble
- **In situ Observation of Deposited Carbon on Anode for Solid Oxide Fuel Cells** – K. Yashiro, K. Takeda, T. Taura, T. Otake, A. Kaimai, Y. Nigara, T. Kawada, J. Mizusaki, and H. Yugami, Tohoku University
- **Two-Layered Anode-Electrolyte Sandwich Structure Manufactured from Zirconia-Based Powder Using CIP** – G. Akimov, E. Chayka, Donetsk Physical & Technical Institute, N.A.S.U., and Y. Darda, Research and Production Enterprise “Etolon”
- **Nanomaterials for SOFC Electrolytes and Anodes on the Base of Zirconia** – T. Konstantinova, I. Danilenko, N. Pilipenko, and G. Volkova, A.A. Galkin Donetsk Institute for Physics and Engineering
- **Development of YSZ Films for Solid Oxide Fuel Cells: Comparison between Electrophoretic and Screen-Printing Depositions** – D. Rotureau, C. Pijolat, J.-P. Viricelle, Ecole Nationale Supérieure des Mines de Saint-Etienne, A. Simone, and L. Montanaro, Politecnico di Torino
- **Electrical Properties of YSZ Thin Films Deposited on Nanoporous Substrates** – Y.-I. Park, Y. Saito, R. Pornprasertsuk, J. Cheng, S.-W. Cha, and F. Prinz, Stanford University
- **Process and Characterization of YSZ Thick-Films Deposited by Electrophoretic Deposition for Intermediate-Temperature SOFC** – G. Savo, A. D’Epifanio, R. Polini, and E. Traversa, Università di Roma Tor Vergata
- **Dopant Segregation in Nanometric TZP Ceramics** – E. Djurado, F. Boulech, and L. Dessemond, Institut National Polytechnique de Grenoble

Tuesday Evening Poster Session

Hall Maillot, Level 2, Le Palais des Congrès
Co-Chairs: S. Visco and T. Kato

- 18:00 • **Equilibria in Fuel Cell Gases** – K. Sasaki and Y. Teraoka, Kyushu University
- **Direct Oxidation as a Market Enabler for Solid Oxide Fuel Cells** – E. Paz, Franklin Fuel Cells, Inc., C. Wang, P. Palanisamy, Sarnoff Corporation, R. Gorte and J. Vohs, University of Pennsylvania
- **Study on the Efficient and Flexible SOFC System** – H. Yokokawa, K. Yamaji, T. Horita, Y.P. Xiong, N. Sakai, National Institute of Advanced Industrial Science and Technology, E. Ivers-Tiffée, A. Weber, A.C. Müller, D. Fouquet, University of Karlsruhe, K. Eguchi, T. Takeguchi, R. Kikuchi, Kyoto University, T. Norby and R. Haugsrud, University of Oslo
- **Direct Methane Oxidation in Micro-Tubular SOFCs Using Doped LaGaO₃ Electrolyte** – V. Mandakolathur, Y. Du, and N. Sammes, University of Connecticut
- **SOFC Single Cell Test Setup for the Use of Various Hydrocarbons** – D. Fouquet, D. Klotz, E. Dannhauser, A.C. Müller, A. Weber, and E. Ivers-Tiffée, Universität Karlsruhe

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- **Influence of Oxygen Vacancies and 26 D-Impurity on Electronic and Transport Properties of Zirconia** – N. Tokiy, T. Konstantinova, D. Savina, Donetsk Physical and Technical Institute, and V. Tokiy, Donetsk Institute of Social Education
- **Influence of Powders on Ionic Conductivity of Polycrystalline Zirconias** – K. Yamahara, C. Jacobson, S. Visco, and L. De Jonghe, University of California
- **Grain Size Dependent Grain Boundary Defect Structure: Case of Doped Zirconia** – X. Guo, Forschungszentrum Jülich
- **Long Term Stability of Yttria and Scandia Doped Zirconia Electrolytes** – A.C. Müller, A. Weber, E. Ivers-Tiffée, Universität Karlsruhe, and D. Herbstritt, DaimlerChrysler AG
- **Lanthanide Diffusion in Calcia Stabilized Zirconia: Experimental and Theoretical Study** – M. Kilo, M.A. Taylor, C. Argiriusis, G. Borchardt, TU Clausthal, S. Weber, H. Scherrer, Ecole des Mines de Nancy, and R.A. Jackson, Keele University
- **Characterization of Cathode Supported Thin Film Electrolytes** – A. Weber, M. Becker, A.C. Müller, and E. Ivers-Tiffée, Universität Karlsruhe
- **Microstructural and Electrical Properties of Gadolinium Doped Ceria Thin Films Prepared by ALD (Atomic Layer Deposition)** – E. Gourba, A. Ringuedé, M. Cassir, ENSCP, J. Päiväsäari, M. Putkonen, and L. Niinistö, Helsinki University of Technology
- **Structural Analysis of $\text{Ce}_{1-x}\text{M}_x\text{O}_{2-0.5x-\delta}$ ($\text{M}=\text{Gd, Sm, Y}$) by High Temperature XRD Under Various Oxygen Partial Pressures** – S. Wang, E. Oikawa, and T. Hashimoto, Nihon University
- **Oxygen Partial Pressure Dependence of Creep on Yttria Doped Ceria Ceramics** – H. Yugami, Y. Endo, T. Otake, T. Kawada, and J. Mizusaki, Tohoku University
- **Charge Carrier Maps for $(\text{La}_{0.9}\text{Sr}_{0.1})\text{M}''\text{O}_{3-\delta}$ ($\text{M}''=\text{Sc and In}$) Perovskites and $(\text{Ce}_{0.8}\text{Sm}_{0.2})\text{O}_{2-\delta}$ Fluorite** – K. Nomura, T. Takeuchi, S.-I. Kamo, H. Kageyama, and Y. Miyazaki, National Institute of Advanced Industrial Science and Technology
- **Sol-Gel Syntheses and Phase Purity of $\text{La}_{1-x}\text{Sr}_x\text{Ga}_{1-y}\text{Mg}_y\text{O}_{3-\delta}$ Solid Electrolytes** – R. Polini, A. Pamio, and E. Traversa, Universita di Roma Tor Vergata
- **Cation Self and Impurity Diffusion in Polycrystalline $\text{La}_{0.9}\text{Sr}_{0.1}\text{Ga}_{0.8}\text{Mg}_{0.1}\text{O}_{2.9}$** – O. Schulz and M. Martin, Aachen University of Technology
- **Crystal Structure and Conductivity of Ba and Y Doped LaAlO_3 Solid Electrolyte** – T.-Y. Chen and K.-Z. Fung, National Cheng-Kung University
- **Phase Transformation from Cubic to Rhombohedral in Doped $\text{Bi}_2\text{O}_3\text{-CaO}$ System** – C.-C. Huang and K.-Z. Fung, National Cheng Kung University
- **Nanocrystalline Titanium Monoxide as Low-Temperature Solid Electrolyte** – L. Zueva, G. Potemkin, Russian Federal Nuclear Center, and A. Valeeva, Russian Academy of Sciences
- **Elaboration and Ionic Conduction of Apatite-Type Rare Earth Dioxides** – S.S. Beaudet, A. Lima, C. Barthet, and A. Henry, CEA Le Ripault
- **Chemical Routes for the Synthesis at Low Temperatures of Rare-Earth Scandate Protonic Conductors** – A. D'Epifanio, P. Nunziante, and E. Traversa, Universita di Roma Tor Vergata
- **Structure and Conductivity of a Yb-Doped $\text{SrCeO}_3\text{-BaZrO}_3$ Solid Solution** – O. Antoine, A.J. McEvoy, Swiss Federal Institute of Technology, C. Hatchwell, Risø National Laboratory, and G.C. Mather, Instituto de Ceramica y Vidrio

Wednesday, April 30, 2003

Havane Amphitheater, Level 3, Le Palais des Congrès

Electrolyte Materials, Processing and Performance

Co-Chairs: E. Ivers-Tiffée and J. Mizusaki

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| 8:00 | Ion Conducting Ceramic Electrolytes: A Century of Progress – R.S. Gordon, Alfred University |
| 8:20 | Modeling of Binder Burnout and Sintering of Solid Oxide Electrolyte Tapes by Thermokinetic Analysis – A.C. Müller, E. Ivers-Tiffée, Universität Karlsruhe, and J.R. Opfermann, Netzsch Gerätetechnik GmbH |
| 8:40 | Densification of SOFC Yttria-stabilized Zirconia Electrolytes through Addition of Sintering Additives – N.H. Menzler, R. Hansch, G. Blass, H.P. Buchkremer, D. Stöver, Forschungszentrum Jülich, R. Fleck, and H. Schichl, Siemens AG |
| 9:00 | Ageing of Solid Oxide Fuel Cells Based on Zirconia or Other Oxide Solid Electrolytes – G. Petot-Ervas, C. Petot, and J.M. Raulot, Ecole Centrale Paris |
| 9:20 | Electrolytic Damage in Zirconia Electrolytes – L.C. De Jonghe, University of California, S.J. Visco, and C.P. Jacobson, Lawrence Berkeley National Laboratory |
| 9:40 | Twenty-Minute Intermission |
| 10:00 | Processing and Properties of Thin-Film Ceria Based SOFC – M. Marrero-Cruz, E. Hong, C. Jacobson, S. Visco, and L. De Jonghe, University of California, Berkeley |
| 10:20 | Stable High Conductivity Bilayered Electrolytes for Low Temperature Solid Oxide Fuel Cells – E. Wachsman, and J.-Y. Park, University of Florida |
| 10:40 | Lanthanum Gallate Electrolyte for Intermediate Temperature Operation – S. Elangovan, S. Balagopal, D. Larsen, M. Timper, J. Pike, and B. Heck, Ceramatec, Inc. |
| 11:00 | Plasma Sprayed LSGM Electrolyte for Intermediate Temperature Solid Oxide Fuel Cells – R. Hui, X. Ma, Inframat Corp., H. Zhang, D. Xiao, D. Reisner, and J. Dai, US Nanocorp Inc. |
| 11:20 | Dependence of Activation Energy on Temperature and Structure in Lanthanum Gallates – J. Bradley, J. Irvine, University of St. Andrews, P. Slater, University of Surrey, and T. Ishihara, Oita University |
| 11:40 | Electrical Conductivity Studies of Ti-substituted $\text{Pr}_{0.45}\text{La}_{0.45}\text{Sr}_{0.1}\text{Ga}_{0.8}\text{Mg}_{0.2}\text{O}_{2.85}$ and Fe-substituted SrSnO_3 – V. Thangadurai and W. Weppner, University of Kiel |

Cathode Materials, Processing and Performance

Co-Chairs: A.V. Virkar and A. Atkinson

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| 13:40 | Improvement of LSM Cathode for High Power Density SOFC – W.G. Wang, R. Barfod, P.H. Larsen, K. Kammer, J. Bentzen, P.V. Hendriksen, and M. Mogensen, Risø National Laboratory |
| 14:00 | Development of LSM/YSZ Composite Electrodes for Thin Film SOFCs – Y.-J. Leng, S.-H. Chan, K.A. Khor, and S.-P. Jiang, Nanyang Technological University |
| 14:20 | Low Cost $(\text{La},\text{Sr})\text{MnO}_3$ Cathode Material with Excellent Electrochemical Properties – E. Proß, J. Laube, H.C. Starck GmbH, A.C. Müller, A. Weber, and E. Ivers-Tiffée, Universität Karlsruhe |

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14:40	Low Temperature Composite Cathodes for SOFC Applications – M. Seabaugh, S. Swartz, K. Hasinska, and C. Holt, NexTech Materials, Ltd.	10:00	Copper-plated Stainless Steel for Bipolar Plates in Direct-oxidation SOFC – S.-I. Lee, S. McIntosh, J. Vohs, and R. Gorte, University of Pennsylvania
15:00	In-situ Measurement of Oxygen Potential around (La,Sr)MnO₃/YSZ Interface – T. Kawada, M. Kudoh, K. Yashiro, A. Kaimai, Y. Nigara, and J. Mizusaki, Tohoku University	10:20	Characterization and Evaluation of Compression Loaded Sealing Concepts for SOFC Stacks – M. Bram, S. Reckers, P. Drinovac, J. Monch, R.W. Steinbrech, H.P. Buchkremer, and D. Stöver, Forschungszentrum Jülich GmbH
15:20	Identification of Gas-Diffusion Process in a Thick and Porous Cathode Substrate of SWPC Tubular SOFC using AC Impedance Method – K. Huang, Siemens Westinghouse Power Corporation	10:40	Nickel/Ceramic Composites for Current Collection Terminals – X. Wei, and A. Atkinson, Imperial College
15:40	Twenty-Minute Intermission	11:00	Current Collection and Stacking of Anode Support Cells with Metal Interconnects to Compact Repeating Units – M. Molinelli, D. Larrain, R. Ihringer, L. Constantin, N. Autissier, D. Favrat, J. Van herle, Swiss Federal Institute of Technology, and O. Bucheli, HTceramix SA
16:00	Effects of Water on the Cathodic Performance of Ba_{0.6}La_{0.4}CoO₃ on the Cell Using LaGaO₃ Based Oxide for Electrolyte – T. Ishihara, S. Fukui, H. Nishiguchi, and Y. Takita, Oita University	11:20	Metallic Components for a Plasma Sprayed Thin-Film SOFC Concept – T. Franco, R. Henne, M. Lang, P. Metzger, G. Schiller, and P. Szabo, German Aerospace Center, DLR
16:20	Electrochemical Characterisation of a La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3-δ} Cathode for IT-SOFCs – A. Esquirol, J. Kilner, Imperial College, N. Bonanos, N. Brandon, and M. Mogensen, Risø National Laboratory	12:00	SOFC-VIII Lunch
16:40	Evaluation of La₂Ni_{1-x}Co_xO_{4±δ} as a SOFC Cathode Material – S. Skinner, C. Munnings, Imperial College London, G. Amow, P. Whitfield, and I. Davidson, NRC Canada		
17:00	Mixed Conducting Porous SOFC Cathodes: Current Distributions and Polarization Resistances – J. Fleig, and J. Maier, Max-Planck-Institute for Solid State Research		
17:20	Nonlinear Harmonic Response of Mixed-Conducting SOFC Cathodes – S. Adler, J. Wilson, and D. Schwartz, University of Washington		
17:40	Use of an “Open” Triple-Phase Boundary to Demonstrate where Chromium Contaminants Initially Deposit at the LSM-YSZ Interface. – S. Paulson and V. Birss, University of Calgary		
20:00	SOFC-VIII Banquet		

Thursday, May 1, 2003

Havane Amphitheater, Level 3, Le Palais des Congrès

Interconnection, Seal and Current Collection Materials

Co-Chairs: M. Singer and N. Sakai

8:00	Defect Formation and Thermal Expansion of Perovskites on the Basis of LaCrO₃ for Solid Oxide Fuel Cells – A. Zuev, L. Singheiser, and K. Hilpert, Forschungszentrum Jülich GmbH
8:20	Evaluation of Metallic Interconnects for use in Intermediate Temperature SOFC – T. Armstrong, M. Homel, Materials and Systems Research, Inc., and A. Virkar, University of Utah
8:40	Metal Interconnect Development—Design and Long-term Stability – S. Elangovan, J. Hartvigsen, R. Lashway, S. Balagopal, and I. Bay, Ceramatec, Inc.
9:00	Characterization of Fe-Cr Alloys in CH₄ Fuels for SOFC Interconnects – T. Horita, Y. Xiong, H. Kishimoto, K. Yamaji, N. Sakai, and H. Yokokawa, National Institute of Advanced Industrial Science and Technology
9:20	A Low CTE Intermetallic Bipolar Plate – W.E. Windes, L.D. Zuck, E.L. Shaber, A.E. Erickson, and P.A. Lessing, Idaho National Engineering and Environmental Laboratory
9:40	Twenty-Minute Intermission

Cell Design, Processing and Performance

Co-Chairs: M. Mogensen and T. Ishihara

13:40	Fabrication and Performance of Anode Supported Solid Oxide Fuel Cells – P. Holtappels, T. Graule, B. Gut, U. Vogt, Swiss Federal Laboratories for Materials Testing and Research, L. Gauckler, M. Jörger, D. Perednis, Swiss Federal Institute of Technology Zuerich, K. Honegger, G. Robert, Sulzer Innotec, A. McEvoy, and S. Rambert, Swiss Federal Institute of Technology Lausanne
14:00	Fabrication of Anode Supported Electrolyte with CeScSZ Electrolyte with NiO-CeScSZ Anode by EPD Technique – K. Yamaji, H. Kishimoto, Y. Xiong, T. Horita, N. Sakai, and H. Yokokawa, National Institute of Advanced Industrial Science and Technology
14:20	Fabrication and Characteristics of Anode-Supported Flat Tubular SOFC – R.-H. Song, J.-H. Kim, H.-J. Son, D.R. Shin, Korea Institute of Energy Research, and H. Yokokawa, Energy Electronics Institute
14:40	Development of Low-Cost Alloy Supported SOFCs – S.J. Visco, C.P. Jacobson, Lawrence Berkeley National Laboratory, and L.C. De Jonghe, University of California
15:00	Development of Thin-Film SOFC for Stationary and Mobile Application by Using Plasma Deposition Technology – G. Schiller, T. Franco, R. Henne, M. Lang, and P. Szabo, German Aerospace Center, DLR
15:20	Electrochemical Characterization of Vacuum Plasma Sprayed SOFCs on Different Porous Metallic Substrates – M. Lang, T. Franco, R. Henne, P. Metzger, G. Schiller, and S. Ziehm, German Aerospace Center, DLR
15:40	Twenty-Minute Intermission
16:00	Solid Oxide Fuel Cells with YSZ Films Prepared Using Spray Pyrolysis – D. Perednis and L. Gauckler, ETH Zurich
16:20	Cathode Supported Thin Film SOFCs – C. Jacobson, S. Visco, Lawrence Berkeley National Laboratory, and L. De Jonghe, University of California
16:40	Patterned Series-Connected SOFCs – T. Lai, J. Liu, and S. Barnett, Northwestern University
17:00	Development of SOFCRoll – F.G.E. Jones, P.A. Connor, and J.T.S. Irvine, University of St. Andrews

- 17:20 **Low Cost Solid Oxide Fuel Cell Stack Design Using Extruded Honeycomb Technology** – W. Rauch, K.J. Lee, J. Cochran, and M. Liu, Georgia Institute of Technoloogy
- 17:40 **Solid Oxide Fuel Cell Research and Development Program at the Connecticut Global Fuel Cell Center** – N. Sammes and K. Reifsneider, The University of Connecticut

Thursday Evening Poster Session

Level 3 Hallway, Le Palais des Congrès
Co-Chairs: J. Stevenson and K. Eguchi

- 18:00
- **Fabrication of High Performance $(\text{La},\text{Sr})\text{MnO}_3$ Cathode by Ion Impregnation** – S.P. Jiang, Y.J. Leng, S.H. Chan, and K.A. Khor, Nanyang Technological University
 - **Synthesis, Structure, and Electrophysical Properties of Cation-Deficient Lanthanum-Calcium Manganites** – N.F. Uvarov, A.P. Nemudry, Russian Academy of Sciences, and Y.G. Mateyshina, Novosibirsk State Univeristy
 - **Development of Cathode Materials by Plasma Process at Room Temperature** – M. Nikravech, F. Rousseau, D. Morvan, and J. Amouroux, Ecole Nationale Supérieure de Chimie de Paris
 - **Surface Modification and Elecron Transport of $(\text{LaSr})\text{MnO}$ Nanoparticles** – V. Krivoruchko, T. Konstantinova, and V. Tarenkov, Institute NAS of Ukraine
 - **Elaboration of Ruddlesden Popper Thin Film Via A Sol-Gel Process for Cathode Materials for SOFC Devices** – M.-L. Fontaine, C. Laberty, F. Ansart, A. Barnabé, and P. Tailhades, UMR 5085
 - **Oxygen Transport and Electrochemical Activity of $\text{La}_2\text{NiO}_{4+\delta}$ Based Cathode Materials** – V. Kharton, A. Yaremchenko, E. Tsipis, and J. Frade, University of Aveiro
 - **New Cathode Materials for ITSOFC: The $\text{Ln}_{2-x}\text{NiO}_{4+\delta}$ Nickelates** – J.-C. Grenier, J.-M. Bassat, E. Boehm, P. Dordor, F. Mauvy, H. Zhao, Institut de Chimie de la Matière Condensée de Bordeaux, and P. Stevens, Universität Karlsruhe
 - **Application of $\text{LaNi}(\text{Fe})\text{O}_3$ as Air Electrode of Solid Oxide Fuel Cells** – H. Orui, K. Watanabe, and M. Arakawa, Nippon Telegraph and Telephone Corporation
 - **Sr-doped Lanthanum Copper Oxides as Novel Electrode for Solid Oxide Fuel Cells** – H.-C. Yu, K.-Z. Fung, and C.-L. Liao, National Cheng Kung university
 - **Preparation of Mixed Oxygen-Ion and Electronic Conducting $\text{Sr}_x\text{Fe}_{6-x}\text{Co}_x\text{O}_{13}$ Thin Films by PLD** – J.A. Pardo, J. Santiso, G. Garcia, and A. Figueras, Instituto de Ciencia de Materiales de Barcelona, CSIC
 - **Precious Metal Thin-Films for SOFC Applications** – R. England, and N. Sammes, University of Connecticut
 - **Comparative Investigation of Polarization Mechanism of Sputter Deposited Cermet Cathodes Interlayers by Impedance-Spectra Time Relaxation Transform Technique** – N.I. Khramushin, I.I. Prilezhaeva, N.P. Soloviev, State Scientific Center of the Russian Federation, and F.N. Pekhota, Ministry of Science and Technologies of Russian Federation
 - **Electrochemical Impedance Characteristics of Some Medium Temperature Semicells for SOFC** – E. Lust, G. Nurk, P. Möller, I. Kivi, S. Kallip, and A. Janes, University of Tartu
 - **Impedance Measurement and Simulation on a Disc Type SOFC Under Power Generation** – A. Momma, T. Kato, K. Nozaki, A. Negishi, K. Kato, Y. Kaga, S. Nagata, K. Takano, National Laboratory of Advanced Industrial Science and Technology, T. Inagaki, H. Yoshida, The Kansai Electric Power Company, Inc., K. Hosoi, K. Hoshino, T. Akbay, and J. Akikusa, Mitsubishi Materials Co.
 - **Protective $\text{La}_{0.8}\text{X}_{0.2}\text{CoO}_3$ ($\text{X} = \text{Ca and Sr}$) Coatings Deposited on Ferritic Steel by Electrophoresis for use as Interconnecting Materials in Intermediate-Temperature SOFCs** – A. Roccia, E. Di Bartolomeo, R. Polini, and E. Traversa, Università di Roma Tor Vergata
 - **Total Solution of Metallic Materials for SOFC** – T. Uehara, A. Toji, K. Inoue, Hitachi Metals,Ltd., M. Yamaguchi, Hltachi Metals,Ltd., and T. Ohno, Hitachi Metals,Ltd.
 - **Novel Fabrication Method for Interconnect Materials** – C. Scorey and R. Mason, Ametek Specialty Metals Inc.
 - **Alternate Sealing Method for Planar SOFC Stack** – J. Duquette and A. Petric, McMaster University
 - **Anode Supported Interconnect for Electrolyte Membrane SOFC** – K. Yasumoto, H. Itoh, and T. Yamamoto, Central Research Institute of Electric Power Industry
 - **High Performance Cell Development Using Scandia Doped Zirconia Electrolyte for Low Temperature Operation** – H. Sumi, K. Ukai, K. Hisada, Y. Mizutani, Toho Gas Co., Ltd., and O. Yamamoto, Aichi Institute of Technology
 - **Low Temperature Technologies for SOFCs** – V. Petrovsky, H. Anderson, and T. Petrovsky, University of Missouri-Rolla
 - **R and D for Low Temperature Solid Oxide Fuel Cells** – B. Zhu, Royal Institute of Technology, Z.F. Ma, Shanghai Jiao Tong University, J. Sun, Z. Zhu, and Z. Mao, Royal Institute of Technology
 - **Planar SOFCs and Stacks Development at IPPE** – A. Gulevich, N. Khramushin, and V. Roujnikov, Institute for Physics and Power Engineering
 - **New Electrolyte-Supported Planar SOFC Design with Via Interconnects** – M. Badding, J. Brown, J. Cortright, T. Ketcham, D. St. Julien, and R. Wusirika, Corning Incorporated
 - **Novel SOFC Tubular Design Configuration** – Y. Du, N. Sammes, and R. England, University of Connecticut
 - **Fabrication Methods of a Leaky SOFC Design** – W.E. Windes, A.E. Erickson, P.A. Lessing, G.M. Huestis, and E.L. Shaber, Idaho National Engineering and Environmental Laboratory
 - **Comparison of Anode and Electrolyte Support Configuration of Single Chamber Solid Oxide Fuel Cell** – P. Jasinski, T. Suzuki, Z. Byars, F. Dogan, and H. Anderson, University of Missouri-Rolla
 - **Fabrication and Characterization of Anode Supported Tubular SOFC with Zirconia Based Electrolyte for Reduced Temperature Operation** – T.L. Nguyen, T. Honda, T. Kato, National Institute of Advanced Industrial Science and Technology, M. Shiono, A. Kobayashi, K. Hosoda, Z. Cai, and M. Dokya, Yokohama National University
 - **Material Design and Processing of CFCL's Cell Assembly** – R. Ratnaraj, K. Ahmed, J. Love, S. Amarasinghe, O. Bellon, and K. Föger, Ceramic Fuel Cells, Ltd.
 - **Fabrication and Performances of a Small SOFC Stack Using Doped Lanthanum Gallate Electrolyte** – Y. Du and N. Sammes, University of Connecticut

Program

- **Collaboration Platform for Research and Development of Solid Oxide Fuel Cells** – M. Koyama, S. Kraines, Y. Tamura, and Y. Fukushima, The University of Tokyo
- **Issues Affecting the Mechanical Integrity of a SOFC** – S. Hagos and R. Travis, Imperial College London
- **Strength of Planar Cells for SOFC Application** – J. Malzbender, R.W. Steinbrech, and L. Singheiser, Forschungszentrum Jülich GmbH
- **Thermal Stress Analysis for an Operating SOFC Stack** – M. Boersma, B. Sharman, and M. Tabatabaian, Global Thermolectric Inc.
- **Modeling of Cross-Flow Stack: Sensitivity to Thermal Properties of the Materials** – D. Larain, J. Van herle, and D. Favrat, Swiss Federal Institute of Technology
- **Cell to Cell Performance Variations within a Stack** – A. Burt, I. Celik, West Virginia University, R. Gemmen, U.S. Department of Energy, and A. Smirnov, West Virginia University
- **In-Plane Temperature and Power Distribution of Vacuum Plasma Sprayed (VPS) SOFC for Mobile Applications** – B. Kuhn, O. Finkenwirth, and M. Eberhard, BMW Group
- **Flooded Homogeneous Model for Composite Cathode of SOFC** – J. Deseure, Y. Bultel, L. Dessemond, and E. Siebert, ENSEEG
- **Verification of Control Theory Based Models for Dynamic SOFC Operation** – S. Schafer, K. Schmid, A. Krügel, A. Weber, E. Ivers-Tiffée, and V. Krebs, Universität Karlsruhe
- **Modeling of Anode-supported SOFCs Operating with H₂ and CO Feed Mixtures** – R. Suwanwarangkul, E. Croiset, M. Fowler, P. Douglas, University of Waterloo, E. Entchev, and M. Douglas, CANMET Energy Technology Center
- **Failure Prediction and Prevention by Knowledge Management in Solid Oxide Fuel Cell Design** – Y. Tamura, M. Koyama, and S. Kraines, The University of Tokyo

Friday, May 2, 2003

Havane Amphitheater, Level 3, Le Palais des Congrès

Electrochemical Performance and Cell Testing

Co-Chairs: J.T.S. Irvine and S. Barnett

- 8:00 **Experimental Requirements for Determination of SOFC Electrode Kinetics** – M. Mogensen and P.V. Hendriksen, Risø National Laboratory
- 8:20 **Probing and Mapping Electrode Reactions in SOFCs Using In-Situ Characterization Techniques** – M. Liu, X. Lu, Georgia Institute of Technology, and P. Faguy, ChevronTexaco Ovonic Fuel Cells
- 8:40 **Electrode Reaction Kinetics at La_{1-x}A_xMnO_{3+y} (A=Sr,Ca)/YSZ Interface** – K. Yasumoto, H. Itoh, Central Research Institute of Electric Power Industry, J. Mizusaki, Tohoku University, S. Wang, Nihon University, H. Tagawa, and M. Dokya, Yokohama National University
- 9:00 **Electrochemical Impedance Spectroscopy Studies of Perovskite/YSZ Ceramic Films** – D. de Florio, Instituto de Pesquisas Energeticas e Nucleares, V. Esposito, G. Savo, E.D. Bartolomeo, and E. Traversa, Universita di Roma Tor Vergata
- 9:20 **Oxygen Electrochemistry at LaSrMnO₃/YSZ Interfaces** – A. Co, S.J. Xia, and V. Birss, The University of Calgary

- 9:40 **Twenty-Minute Intermission**
- 10:00 **Break Down of Losses in Thin Electrolyte SOFCs** – P. Vang Hendriksen, S. Koch, and M. Mogensen, Risø National Laboratory
- 10:20 **Long-Term Test of DK-SOFC Cells** – R. Barfod, S. Koch, Y.-L. Liu, P.H. Larsen, and P.V. Hendriksen, Risø National Laboratory
- 10:40 **Improved Solid Oxide Fuel-Cell Performance with Sputtered Pt Catalysts** – J.-H. Wan and J. Goodenough, University of Texas at Austin
- 11:00 **Noble Metals in SOFC Cathodes: Processing and Electrochemical Performance** – D. Rutenbeck, V.A.C. Haanappel, A. Mai, S. Uhlenbruck, F. Tietz, and I.C. Vinke, Forschungszentrum Jülich
- 11:20 **Comparison Between LSCF-CGO and GSC-CGO Composite Cathodes on an CGO Electrolyte for IT-SOFC** – G. Sivasundram, and J. Kilner, Imperial College of Science, Technology and Medicine
- 11:40 **Microstructural and Electrochemical Characterization of LSFC-Based Cathodes for Anode-Supported Solid Oxide Fuel Cells** – A. Mai, V.A.C. Haanappel, F. Tietz, I.C. Vinke, and D. Stöver, Forschungszentrum Jülich

Cell, Stack and System Modeling

Co-Chairs: L.G. J. de Haart and M. Khaleel

- 13:40 **Modeling of the Potential Jump at Electrode-Electrolyte Interface using Singularity Distribution** – I. Celik, S. Pakalapati, West Virginia University, and R. Gemmen, U.S. Department of Energy
- 14:00 **Analytical and FEM-Modelling of Cathode/Electrolyte Interfaces** – D. Herbstritt, A.C. Müller, A. Weber, and E. Ivers-Tiffée, Universität Karlsruhe
- 14:20 **Micro-Modeling of Porous SOFC Anode** – M. Alkhateeb, S. Parulekar, J.R. Selman, and S. Al-Hallaj, Illinois Institute of Technology
- 14:40 **Control Theory Based Models for the Dynamic Operation of SOFCs** – A. Krügel, S. Schafer, K. Schmid, A. Weber, E. Ivers-Tiffée, and V. Krebs, Universität Karlsruhe
- 15:00 **SOFC Modeling and Simulation under the U.S. DOE SECA Core Technology Program** – W. Rogers, D. Collins, U.S. DOE National Energy Technology Laboratory, M. Khaleel, Battelle Pacific Northwest National Laboratory, and E. Lara-Curcio, Oak Ridge National Laboratory
- 15:20 **Microstructural and Continuum Electrochemistry Models** – M. Khaleel, D. Rector, and K. Recknagle, Pacific Northwest National Laboratory
- 15:40 **Twenty-Minute Intermission**
- 16:00 **A Computational Fluid Dynamics Model of a SOFC** – K. Sudaprasert, R. Travis, and R. Martinez-Botas, Imperial College London
- 16:20 **Computational Fluid Dynamics Modeling of Solid Oxide Fuel Cells** – U. Pasaogullari and C.-Y. Wang, The Pennsylvania State University
- 16:40 **Investigation and Modelling of the Flow Field in SOFC** – X. Yan, BMW Group, and N. Bundschuh, DLR
- 17:00 **Complete Modeling of kW-Range SOFC Stacks** – A. Gubner, D. Froning, B. de Haart, and D. Stolten, Forschungszentrum Jülich GmbH
- 17:20 **Simulation of a 220 kW Hybrid SOFC Gas Turbine System and Data Comparison** – Y. Yi, T. Smith, J. Brouwer, A. Rao, and S. Samuelsen, University of California
- 17:40 **Concluding Remarks** - S.C. Singhal

Registration and hotel information is available at:
<http://www.electrochem.org/meetings/future/203/support/brochure.pdf>
and registration can be completed on-line. The deadline for advance registration is March 10, 2003; the on-site registration fees will be higher.

For further information or to purchase a copy of the SOFC-VIII Proceedings (PV2003-07), contact:
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